

इंटरनेट

मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 4833 (1993): Methods for field testing of preservatives in wood [CED 9: Timber and Timber Stores]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

BLANK PAGE



भारतीय मानक

लकड़ी में परिरक्षकों के फील्ड परीक्षण की पद्धतियाँ

(पहला पुनरीक्षण)

Indian Standard

METHODS FOR FIELD TESTING OF
PRESERVATIVES IN WOOD

(*First Revision*)

UDC 674.048 : 620.1

© BIS 1993

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Timber Sectional Committee had been approved by the Civil Engineering Division Council.

Details of preservatives, method of preservative treatment, etc, have been covered in IS 401 : 1982. This standard deals with the method for the field testing of wood preservatives in wood.

This standard was first published in 1968. Based on the experience gained in the field, this revision has been brought out wherein the field testing of preservatives against termites has also been included.

In reporting the results of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'.

Indian Standard

METHODS FOR FIELD TESTING OF PRESERVATIVES IN WOOD

(*First Revision*)

1 SCOPE

This standard covers the methods for field testing of preservatives in wood and also for determining durability of treated and untreated timber.

2 REFERENCES

Indian Standard IS 401 : 1982 'Code of practice for preservation of timber (*third revision*)' is necessary adjunct to this standard.

3 FIELD TESTING OF PRESERVATIVES USING STAKES

3.1 Species

Two non-durable wood species, that is, chir (*Pinus roxburghii*) and mango (*Mangifera indica*) shall be selected for tests with preservatives.

3.1.1 Size and Selection of Specimens

The specimens shall be 305 mm long and 38.1 mm square in cross-section for tests. The stakes shall be free from knots, stain, mould, decay or other defects that may affect adversely the uniformity of treatment.

3.2 Treatment

The treatment shall be carried out as given in IS 401 : 1982. The specimens shall be treated to three different levels of absorption with each preservative. The specimens treated with a preservative to a particular absorption shall be selected in such a way that their absorption remains within a range of ± 2.5 percent of the required absorption.

3.3 Selection of Sites for Installation of Specimens

Preferably six testing sites located in different climatic and topographical conditions shall be selected for laying out the specimens for tests.

3.4 Replications and Installation of Specimens in the Test Yard

Six replicates of each species and absorption along with three control (untreated) specimens shall be obtained for each test yard. The

specimens both treated and untreated shall be buried half of its length below the ground in horizontal and vertical rows 600 mm apart.

3.5 Inspection and Recording of Results

The specimens shall be inspected after installation quarterly in the first year, half-yearly in the second year, and yearly in the subsequent years. The inspection shall be carried out by visual observation of the condition of the specimens with regard to termite and fungal attack (the borer attack being practically negligible). Where necessary, knife test by piercing the wood shall be done to determine the extent of decay. While evaluating the results of the visual observation, 5 to 10 percent of attack shall be taken as slight (1-1.5 score), 11 to 25 percent as moderate (2-3 score), 26 to 50 percent as bad (3-4.5 score) and above 50 percent as destroyed (5 score).

4 FIELD TESTING OF PRESERVATIVES USING THIN SPECIMENS (ACCELERATED TEST)

4.0 This test is recommended to obtain quick and comparative results of behaviour of different preservatives.

4.1 Size of Specimens

Specimens of 153 mm \times 38 mm \times 6.25 mm size are taken as mentioned for stake tests (see 3) only after proper seasoning in the plank form of the chir (*Pinus roxburghii*) and mango (*Mangifera indica*).

4.2 Inspection and Recording of Results

After installation of specimens in the field, regular inspection shall be carried out every month in the first year, after every two months in the second year and half-yearly in the third year and subsequent years. Results shall be recorded as for stake test (see 3.5).

5 FIELD TESTING OF PRESERVATIVE AGAINST TERMITES

5.0 This test is recommended to obtain quick and comparative results of preservatives against termites.

5.1 Species

Bombax ceiba (Semul) a highly termite prone species, shall be selected for test with preservatives.

5.2 Size and Selection of Specimens

The specimens shall be 100 mm × 25 mm × 6 mm in size with a hole for tying the specimen as mentioned in 5.4 at 10 mm from the end and free from any defect.

5.3 Treatment

Treatment shall be given as per IS 401 : 1982 to obtain six levels of absorption.

5.4 Replication and Installation of Specimen

Six replicates in each of the six absorption level alongwith 6 control (untreated specimen) shall be taken. The treated/untreated samples shall be tied together so as to form a chain with the help of a wire. These chained samples shall be buried in the termite mounds at 6 different places.

NOTES

1 In areas where only sub-terranean termites (which do not build above ground visible mound) are present, highly termite-prone areas by way of experience, should be selected and samples shall be buried.

2 In areas, where extreme climates are prevalent, as termite activity ceases after November, tests shall be carried out for six months during May to November. In areas, where rainfall is high, tests shall be conducted for three months during early summer (maintaining the termite activity by sprinkling water during hot days).

5.5 Inspection and Recording of Results

The specimens shall be dug out after the required duration cleaned off mud and debris and evaluated visually for deterioration, as per rating given below:

Condition of Samples	Numerical Rating
No attack; samples free from termite attack	0
Trace attack; termite attacked area less than 5 percent of surface area	0.5
Light attack; termite attacked area between 5 and 20 percent of surface area	1.0
Moderate attack; termite attacked area between 20 and 30 percent of surface area	2.0
Heavy attack; termite attacked area 35 to 40 percent of surface area	3.0
Very heavy attack; termite attacked area more than 50 percent of surface area	4.0

6 DURABILITY OF UNTREATED AND TREATED TIMBER SPECIES

6.0 For testing durability of different timbers (treated and untreated), the following procedure shall be adopted.

6.1 Size and Selection of Specimens

Specimens 305 mm long and 38.1 mm square in cross section are taken for tests entirely from the heartwood of seasoned planks. The selection of specimens from each log for natural durability tests and tests after treatment is made at random.

6.2 Replications

For each species, 6 logs shall be tested at the rate of two logs obtained from 2 mature trees (one from each tree) from three different widely growing areas. From each tree a log of about 2 to 2.5 m in length at about one metre from ground is obtained. From each log, specimens of standard size shall be taken at the rate of six pieces for each preservative and absorption and for each test yard. These specimens shall be treated to three different levels of absorption including one control (untreated). Along with the test species, two reference species, one representing coniferous and one broadleaved wood, namely, chir (*Pinus roxburghii*) and mango (*Mangifera indica*) respectively shall also be tested. These will help comparison of durability of the test species with them. Also the specimens of these two species will help in evaluating the degree of deteriorating conditions with respect to fungi and insects and eventually between different years in which specimens of different species are installed. The installation of specimens shall be carried out as in case of stakes (see 3.4).

6.3 Treatment

Treatment shall be given as per IS 401 : 1982 with creosote-fuel oil mixture 50 : 50 and copper-chrome-arsenic composition at three levels of absorptions details of which are given below:

- Creosote-Fuel Oil Mixture (50 : 50)* — Absorptions are 160 kg, 80 kg and 48 kg per cubic metre of timber.
- Copper - Chrome - Arsenic Composition (3 : 4 : 1)* — Absorptions are 16 kg, 8 kg, and 4.8 kg (dry salt) per cubic metre of timber.

6.4 Inspection and Recording of Results

The inspection and recording of results shall be done in the same manner as given in 3.5.

Standard Mark

The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act, 1986* to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Copyright

BIS has the copyright of all its publications. No part of these publications may be reproduced in any form without the prior permission in writing of BIS. This does not preclude the free use, in the course of implementing the standard, of necessary details, such as symbols and sizes, type or grade designations. Enquiries relating to copyright be addressed to the Director (Publications), BIS.

Revision of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Handbook' and 'Standards Monthly Additions'. Comments on this Indian Standard may be sent to BIS giving the following reference:

Doc : No CED 9 (5010)

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones : 331 01 31, 331 13 75

Telegrams : Manaksanstha
(Common to all Offices)

Regional Offices :

Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg
NEW DELHI 110002

Telephone

{ 331 01 31
{ 331 13 75

Eastern : 1/14 C. I. T. Scheme VII M, V. I. P. Road, Maniktola
CALCUTTA 700054

{ 37 84 99, 37 85 61
{ 37 86 26, 37 86 62

Northern : SCO 445-446, Sector 35-C, CHANDIGARH 160036

{ 53 38 43, 53 16 40
{ 53 23 84

Southern : C. I. T. Campus, IV Cross Road, MADRAS 600113

{ 235 02 16, 235 04 42
{ 235 15 19, 235 23 15

Western : Manakalaya, E9 MIDC, Marol, Andheri (East)
BOMBAY 400093

{ 632 92 95, 632 78 58
{ 632 78 91, 632 78 92

Branches : AHMADABAD. BANGALORE. BHOPAL. BHUBANESHWAR. COIMBATORE.
FARIDABAD. GHAZIABAD. GUWAHATI. HYDERABAD. JAIPUR. KANPUR.
LUCKNOW. PATNA. THIRUVANANTHAPURAM.